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Department of Energy  
Finding of No Significant Impact  
Low Energy Demonstration Accelerator

Los Alamos National Laboratory

U. S. Department of Energy  
Los Alamos Area Office  
528 35th Street  
Los Alamos, NM 87544

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DEPARTMENT OF ENERGY  
FINDING OF NO SIGNIFICANT IMPACT  
LOW ENERGY DEMONSTRATION ACCELERATOR  
LOS ALAMOS NATIONAL LABORATORY

PROPOSED ACTION: As part of the Department of Energy's (DOE) need to maintain the capability of producing tritium in support of its historic and near-term stewardship of the nation's nuclear weapons stockpile, the agency has recently completed a Programmatic Environmental Impact Statement for Tritium Supply and Recycling. The resulting Record of Decision determined that over the next three years the DOE would follow a dual-track acquisition strategy that assures tritium production for the nuclear weapons stockpile in a rapid, cost effective, and safe manner. Under this strategy the DOE will further investigate and compare two options for producing tritium: (1) purchase of an existing commercial light-water reactor or irradiation services with an option to purchase the reactor for conversion to a defense facility; and (2) design, build, and test critical components of a system for accelerator production of tritium (APT). The final decision to select the primary production option is scheduled to be made by the Secretary of Energy in the October 1998 time frame. The alternative not chosen as the primary production method, if feasible, would be developed as a back-up tritium supply source.

The Environmental Assessment (EA) for the Low Energy Demonstration Accelerator (LEDA) at Technical Area (TA) 53, Los Alamos National Laboratory (LANL), Los Alamos, New Mexico (DOE-EA-1147), March 1996, analyzes the DOE proposal to design, build, and test critical prototypical components of the accelerator system for tritium production, specifically the front-end, low-energy section of the accelerator at LANL. LEDA would be

incrementally developed and tested in five separate stages over the next seven years. LEDA would be located at an existing building at TA-53; the LEDA components would be tested in order to verify equipment and prototype design and resolve related performance and production issues for future full-scale operation at Savannah River Site (SRS) in the event the APT plant is built. Production operations would not occur at LANL under the proposed action.

The EA compares the effects of the proposed action with the effects of the no action alternative, which is not to conduct the LEDA project. The no action alternative does not meet the DOE's purpose and need; however, it was analyzed in the EA to provide a baseline comparison with the proposed action. DOE considered, but dismissed from further analysis, alternatives including (1) conducting the LEDA project at an alternative location at LANL, (2) conducting the LEDA project at another DOE facility, and (3) developing an alternative accelerator technology. Conducting the LEDA project at another LANL or DOE site was eliminated due to the schedule and cost constraints inherent in demonstrating the feasibility of the accelerator production of tritium by October of 1998. Developing an alternative accelerator technology was eliminated from further analysis in this EA either due to lack of technical feasibility or a direct conflict with the October 1998 implementation schedule.

The rationale for dismissing these alternatives was based on the fact that none of the alternatives would reasonably meet the purpose and need for agency action. Only the preferred alternative would reasonably achieve the need to design, build, and test critical prototypical components of a system for accelerator production of tritium.

**ENVIRONMENTAL EFFECTS:** The EA indicates that the environmental effects of the proposed action under normal operating conditions would be minimal. Construction would be associated with interior building modifications of an existing building (Building MPF-365), and with new water towers and utility lines to provide utilities to Building MPF-365. This new construction of water towers and utility lines would occur adjacent to existing buildings and in previously disturbed areas.

The following environmental issues were evaluated for the proposed action: utility demands, air, human health, environmental restoration, waste management, transportation, water, threatened and endangered species, wetlands, cultural resources, and environmental justice. (1) The LEDA project would use additional electricity, natural gas, and water that would be provided by proposed and existing on-site support facilities. (2) There would be a slight increase in non-radioactive air emissions as a result of normal LEDA project operations and increased support facility activities, but they would not exceed ambient air standards. Radioactive air emissions from accelerator operation at TA-53 are expected to remain relatively constant; however, if it is determined that planned engineering controls are unable to limit radioactive emissions to current levels or below, appropriate permits would be sought. (3) The proposed LEDA project would slightly increase the worker, co-located worker, and public dose from activated main products released from the LEDA building exhaust stack. However, no additional cancer fatalities in the population within 80 km (50 mi) of LANL would be expected to result from the LEDA project. (4) LANL's Environmental Restoration (ER) project has identified an area of lead shot (pellets) located immediately down gradient of the National Pollutant Discharge Elimination System (NPDES) permitted outfall that would be used for the LEDA project.

(5) The LEDA project would generate construction and demolition debris, and other solid waste, non-radioactive treated cooling water, asbestos waste, hazardous waste, and solid and liquid low-level radioactive waste. Construction and demolition debris would be disposed of in the Los Alamos County Landfill. Treated cooling water would be discharged through a permitted outfall into Sandia Canyon, which is adjacent to TA-53. Asbestos and hazardous wastes would be managed on-site for off-site disposal. Low-level radioactive waste would be managed on-site by LANL's waste management system. (6) Discharged cooling water could produce surface flow in Sandia Canyon during the third through seventh years of the LEDA project. Although Potential Release Sites (PRSs) have been identified in Sandia Canyon, these sites are either slated for remediation within the next two years either by soil removal (2 PRSs) or by stream isolation methods (1 PRS), or contain no known radionuclides, heavy metals, or organics above screening action levels that could move downstream (9 PRSs). Polychlorinated Biphenyls (PCBs) are known to have migrated into the head of Sandia Canyon from a Solid Waste Management Unit (SWMU) located in TA-3, which is situated a couple of miles upstream from TA-53. The ER Project is actively coordinating remediation of this SWMU with the State of New Mexico Environment Department. Analysis of stream sediment samples from an area along Sandia Canyon near the LEDA outfall (Outfall 03A-113) indicates that the PCBs have not spread downstream to the outfall location in concentrations above the analytical method detection limit. Therefore, it is not expected that the LEDA cooling tower water discharges would spread PCB contamination downstream from the outfall area. (7) The increased discharge from Outfall 03A-113 could produce saturated substrate conditions in Sandia Canyon; however, other characteristics necessary to create a wetland are not expected to develop during the LEDA project. (8) No transportation accidents are likely, nor are there

likely to be any adverse effects on threatened and endangered species or cultural resources. No environmental justice issues have been identified.

The accident scenario with the worst potential consequence to the worker would involve a high power electrocution resulting in serious injury or death. This accident has the likelihood of occurring once in ten thousand to one million years. The accident scenario with the worst potential consequence to the co-located worker, the public, and the environment would involve a beam spill, which would be largely confined within the shielded beam tunnel. This accident would result in a negligible (acute) dose from neutron and gamma radiation and no adverse health or environmental effects. This accident has the likelihood of occurring once in ten thousand to one million years.

**MITIGATION MEASURES:** Three mitigation measures would take place either prior to or during release of increased discharges from LEDA through NPDES Outfall 03A-113. (1) Before water from LEDA actions is released through Outfall 03A-113, the remediation of the lead shot immediately down gradient of the outfall would be completed. (2) The wastewater released through Outfall 03A-113 would be monitored quarterly to ensure that it meets the requirements of LANL's NPDES permit. The drainage channel of the outfall would also be monitored for erosion effects, and appropriate erosion controls would be implemented if needed as the project develops. Erosion controls could consist of such means as a spill pad with velocity breakers. (3) In the unlikely event that a wetland would form by the end of the LEDA project, further biological evaluation would be performed. Appropriate NEPA analysis and wetland regulatory compliance evaluation would be conducted before flow to the outfall is eliminated.

An additional mitigation measure may take place prior to construction involving soil disturbance. Depending upon the final design plan for utility construction, over 5 acres of soil could be disturbed and, in that case, a Pollution Prevention Plan would need to be implemented and maintained for the duration of construction activities with appropriate revegetation to follow.

**PERMITS:** Because radioactive air emissions are involved in LEDA, a preconstruction approval from EPA following 40 CFR 61, Subparts A and H, may be required. LANL group ESH-17 (Air Quality) has already determined that this approval is not required for Stage I of LEDA. A National Emission Standards for Hazardous Air Pollutants permit may be required for Stage II through V.

Non-radioactive air emissions are not expected to increase the TA-53's current potential volatile organic emissions. Therefore, a construction permit for the LEDA project would not be required under 20 NMAC. Since the project would, under normal conditions, require use of about an additional 463 million ft<sup>3</sup>/yr of gas for electrical power generation in Stages IV and V, it may approach LANL's operational limit for the TA-3 Steam Power Plant, which supplies electrical power to TA-53. An increase in fuel consumption above 1,500 million ft<sup>3</sup> would be considered a modification to TA-3 and would require a construction permit under 20 NMAC 2.72.

LANL's NPDES permit had previously identified Outfall 03A-113 as having an expected flow of 10.1 million liters/yr (2.7 million gal/yr). The LEDA project would, on average, in Stages IV and V release about 148 million liters/yr (39.1 million gal/yr). LANL has

submitted a Notice of Change Conditions to the EPA. This notice indicates the expected increase in discharges volume from Outfall 03A-113.

If the final designs for the LEDA project indicate that there would be more than 5 acres of ground disturbance, a Stormwater Construction Permit and a Pollution Prevention Plan under NPDES would be required. Current, worst-case estimates indicate that 5.1 acres would be disturbed.

No other new environmental permits would be required to conduct the LEDA project at TA-53.

**PREDECISIONAL DRAFT REVIEW & COMMENT:** On February 22, 1996, DOE invited review and comment on the preapproval EA from the State of New Mexico, the U. S. Fish and Wildlife Service (USFWS), and four American Indian Pueblos: Cochiti, Jemez, Santa Clara and San Ildefonso. In addition, DOE made the pre-decisional draft EA available to Los Alamos County and the general public at the same time it was provided to the state and pueblos by placing it in the Los Alamos National Laboratory Community Reading Room and the DOE Public Reading Room in Albuquerque. Also, local stakeholder groups were notified of the availability of the pre-decisional draft on February 22, 1996.

Comments were received from two parties; the Bueno Los Alamos Surveillance Team (BLAST) and the New Mexico Environment Department (NMED). Both sets of comments were addressed in the Final EA, and individual responses to the comments were prepared by LAAO and sent to the respondents.



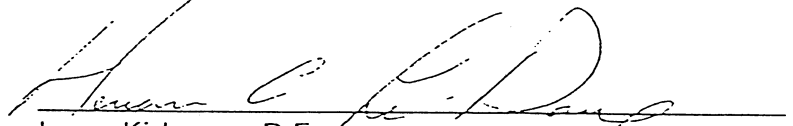
FOR FURTHER INFORMATION CONTACT: For further information on this proposal, this Finding Of No Significant Impact (FONSI), or the DOE's National Environmental Policy Act (NEPA) review program concerning proposals at LANL, please contact:

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Copies of the environmental assessment and this FONSI will be made available for public review at the Los Alamos National Laboratory Community Reading Room, 1450 Central Avenue, Suite 101, Los Alamos, New Mexico, 87544 at (505) 665-2127 or (800) 543-2342. Copies will also be made available in the DOE Public Reading Room, located in the Atomic Museum, 20358, Wyoming Boulevard, Albuquerque, New Mexico, 87185 at (505) 845-6670.

**FINDING:** The United States Department of Energy finds that there would be no significant impact from proceeding with its proposal to design, build, and test critical prototypical components of the accelerator system for tritium production, specifically the front-end, low-energy section of the accelerator, at TA-53, LANL. DOE makes this Finding of No Significant Impact pursuant to the National Environmental Policy Act of 1969 [42 U.S.C. 4321 et seq.], the Council on Environmental Quality (CEQ.) regulations [40 CFR 1500] and the DOE NEPA regulations [10 CFR 1021]. Based on the environmental assessment that analyses the potential environmental effects that would be expected to occur if the DOE were to design, build, and test prototypical components of the accelerator system for tritium production, the proposed action does not constitute a major federal action which would significantly affect the human environment within the meaning of NEPA. Therefore, no environmental impact statement is required for this proposal.

Signed in Los Alamos, New Mexico this 1<sup>st</sup> day of April, 1996.



Larry Kirkman, P.E.  
Acting Area Manager  
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